Clean Air Facts

Secondary Aluminum MACT and Area Source Requirements

SBCA-ALM1-0103

The Environmental Protection Agency (EPA) sets standards to control hazardous air pollution through MACT standards as part of the 1990 Clean Air Act Amendments. "MACT" stands for Maximum Achievable Control Technology. Most MACT standards only apply to *major sources*. For secondary aluminum production facilities, the requirements for dioxin and furan emissions apply to *area sources* as well - *area sources* are those with emissions below the major source level.

Secondary Aluminum MACT

A MACT rule for secondary aluminum production facilities was issued on March 23, 2000. Secondary aluminum production facilities include aluminum scrap shredders, thermal chip dryers, scrap dryers/ delacquering kilns/ decoating kilns, melting and/or holding furnaces (group 1 and group 2), sweat furnaces, dross-only furnaces, and rotary dross coolers.

Major sources of hazardous air pollutants will have to comply with every section of the rule that is applicable to their specific emissions units. A major source is a facility with emissions greater than 10 tons per year of any one hazardous air pollutant or greater than 25 tons per year of all hazardous air pollutants. The hazardous air pollutants regulated here are the 188 listed by EPA in section 112(b) of the Clean Air Act. Refer to the fact sheet **MTE and PTE Calculation Examples** from the Small Business Clean Air Assistance Program (SBCAAP) for assistance in determining if you are a major or area source.

The sections of the rule related to dioxin and furan (D/F) emissions will affect both major AND area sources. Area sources are those businesses with emissions of hazardous air pollutants below the major source level. There is no lower limit on the size of businesses affected.

While this is a federal rule, the Wisconsin Department of Natural Resources (DNR) will be the delegated authority for enforcing the requirements of the rule and will be incorporating the rule into the Wisconsin Administrative Code in 2003.

Area Sources Affected

Of all the affected processes at a secondary aluminum production facility, area sources will have to meet the D/F limits on the following units:

❶ Thermal chip dryers
❷ Scrap dryers/ delacquering kilns/ decoating kilns
❸ Group 1 furnaces (or a secondary aluminum production unit {SAPU} with one or more Group 1 furnaces)
❹ Sweat furnaces

Aluminum die casters, foundries or extruders are NOT AFFECTED by the rule so long as they melt only clean charge, unpainted/uncoated customer returns, and internal runaround and DO NOT operate any units under 1, 2 or 4 above. The one exception to that is for aluminum die casters, foundries or extruders that are area sources and that operate thermal chip dryers - their furnaces will not be subject to the rule so long as the dryer operates with only the materials listed above.

Clean charge is considered:

✔ molten aluminum;

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FROM THE SMALL BUSINESS CLEAN AIR ASSISTANCE PROGRAM
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- ✔ T-bar, sow, ingot, billet, pig;
- ✔ alloying elements;
- ✔ uncoated/unpainted chips, thermally dried or treated by a centrifugal cleaner;
- ✔ aluminum scrap dried at no less than 650°F;
- ✔ aluminum scrap delacquered or decoated at no less than 900°F;
- ✔ oil and lubricant free, unpainted/uncoated gates and risers;
- ✔ oil and lubricant free, unpainted/uncoated scraps, shapes or products not contaminated;
- ✔ runaround scrap as defined in the rule.

New units must be in compliance upon start up while existing units, those installed prior to February 11, 1999, must comply **by March 23, 2003**. This date is very important because EPA is adjusting their rule to require that initial performance testing be completed prior to that date rather than giving the sources 180 days from the compliance date as they have in other rules.

Thermal Chip Dryers

A thermal chip dryer is a device that uses heat to evaporate water, oil or oil/water mixtures from unpainted/uncoated aluminum chips. Preheating units used solely to drive off water are not considered thermal dryers for this rule.

Emission Limits

An owner or operator of a thermal chip dryer must have emissions of dioxin/furan toxic equivalents (D/F TEQ) no more than 3.5 x 10^{-5} grains (gr) per ton [2.50 micrograms (µg) per megagram (Mg)] of feed/charge. It may be necessary to install an afterburner to the exhaust of the thermal chip dryer in order to meet the emission limit.

Compliance Demonstration

The thermal chip dryer may not be operated with anything but unpainted/uncoated aluminum. An initial performance test will be required prior to the compliance date of this rule. When controlled by an afterburner, the average operating temperature of the afterburner will also be measured during the performance test. **Refer to Appendix A** for all the compliance details for thermal chip dryers.

Scrap Dryer/Delacquering Kiln/Decoating Kiln

A scrap dryer/delacquering kiln/decoating kiln refers to a unit that is primarily used to remove various organic contaminants such as oil, paint, lacquer, ink, plastic, and/or rubber from aluminum scrap - including used beverage containers - prior to melting.

Emission Limits

An owner or operator of a scrap dryer/ delacquering kiln/ decoating kiln must have emissions of D/F TEQ no more than 3.5 x 10^{-6} gr per ton [0.250 µg per Mg] of feed/charge. It may be necessary to install an afterburner and a lime-injected fabric filter to control emissions sufficiently to meet the limit.

Compliance Demonstration

An initial performance test will be required prior to the compliance date of this rule. When using an afterburner to meet the emission limit, the average operating temperature of the afterburner will also be measured during the performance test. When a lime-injected fabric filter is used to control emissions, a leak detection system or a continuous opacity monitor may be used to monitor the control device. Visible labels are required on each unit that identifies the emission limit and means of compliance. For all the details on compliance demonstration for scrap dryers/delacquering kilns/decoating kilns, **refer to Appendix B**.

Group 1 Furnaces

These are furnaces of any design that melt, hold or process aluminum that contains paint, lubricants, coatings, or other foreign materials with or without reactive fluxing, or process clean charge *with* reactive fluxing.

Emission Limits

An owner or operator of a Group 1 furnace, including when part of a secondary aluminum production unit (SAPU), must have emissions of D/F TEQ no more than 2.1 x 10^{-4} gr per ton [15 µg per Mg] of feed/charge.

Compliance Demonstration

The emission limit must be met on a 3-day, 24-hour rolling average of D/F emissions. An area source may also demonstrate compliance for a SAPU without performing the above calculation by showing that each unit within the SAPU can meet the limit for a group 1 furnace. Visible labels are required on each unit that identifies the emission limit and means of compliance.

With Add-on Control Device

An initial performance test will be required prior to the compliance date of this rule. For a lime-injected fabric filter, a leak detection system or a continuous opacity monitor may be used to monitor the control device. Maintain the total reactive flux injection rate at or below the average rate established during the performance test. Each sidewell furnace must be operated so that the molten metal remains above the passage between the sidewell and the hearth. If the metal goes below the level of the passage they must either add reactive flux only to the sidewell OR they must have the hearth exhausted to the control device as well. **Refer to Appendix C** for all the details on the compliance demonstration requirements.

Without Add-on Control Device

If no control device is used to meet the emission limit for a Group 1 furnace, then the owner/operator must meet the following operating conditions. Maintain the total reactive flux injection rate at or below the average rate established during the performance test. Operate the furnace in accordance with work practice standards or pollution prevention measures documented in the Operation, Maintenance and Monitoring Plan (OM&M) and within any parameters values or ranges established in the OM&M. Develop a scrap inspection program to monitor the level of contamination in the scrap. **Refer to Appendix C** for the details of the compliance demonstration requirements.

Sweat Furnaces

A sweat furnace is a unit that is specifically designed to reclaim aluminum from scrap that also contains large quantities of iron. The aluminum has a lower boiling point than iron and will melt off in the furnace at the right temperature while the iron remains solid.

Scrap yards might use a sweat furnace to reclaim aluminum from items like sheet and cast aluminum, while automotive salvage operations can reclaim aluminum from unusable auto parts like transmissions.

Emissions Limits

Any owner or operator of a sweat furnace may not allow emissions of D/F TEQ greater than 3.5 x 10^{-10} gr per dry standard cubic foot (dscf) [0.80 nanogram (ng) per dry standard cubic meter (dscm)] at 11 percent oxygen. For a sweat furnace to meet this limit would most likely mean installation of an afterburner on the furnace exhaust.

An **alternate limit** is to operate an afterburner with a residence time of 0.8 seconds or greater and an operating temperature of 1600°F or greater. So if the afterburner you installed has a residence time shorter than 0.8 seconds or cannot be operated at sufficiently high temperature, then you would have no option but to meet the emissions limit of 3.5 x 10^{-10} gr per dscf and perform a compliance test.

Compliance Demonstration

An initial compliance test is required to demonstrate that each afterburner can meet the level of emissions required in the limit. If you opt for the alternate limit, you would not be required to perform an initial compliance test. Instead, the afterburner criteria in the alternate limit must be met at all times the sweat furnace is in operation. **Refer to Appendix D** for the details on compliance demonstration.

General Compliance Demonstration Requirements

Each of the affected units will need to follow these requirements as well as those specified above and in the different appendices.

Equation for Determining Compliance:

When determining compliance with the emissions limit from the performance test results for any of the feed/charge rate based limits, the following equation

should be used:

$$E = \frac{C \times Q \times K_1}{P} \qquad \text{(equation 7)}$$

E= emission rate of D/F in (lb/ton)
C= concentration of D/F in (gr/dscf)
Q= volumetric flow rate of exhaust gas in (dscf/hr)
K_1= conversion factor (1 lb/7000gr)
P= production rate (ton/hr)

Capture/Collection System

Anyone installing a control device to meet an emission limit must also have a capture and collection system designed and installed to meet engineering standards of minimum exhaust rates {per American Conference Governmental Industrial Hygienists' *Industrial Ventilation* Manual, chapters 3 and 5}. The system must vent the captured emissions through a closed system, except where dilution air is added to control temperature at the inlet of a fabric filter. This must be inspected at least once each calendar year.

Weight Throughput or Produced

For any device required for measuring the weight (feed/charge, production, reactive flux injection, etc.) there are specific requirements for installation, calibration, operation and maintenance as well as an accuracy requirement. Refer to the rule for these details.

It will be necessary to maintain records for each unit with a feed/charge or production throughput based limit. Both the types and amounts of materials fed/charged or produced must be recorded. The owner/operator will also be required to certify every 6 months as to compliance with the types of materials allowed to be fed/charged to the units.

Add-on Control Devices

There are detailed requirements on installation, operation and maintenance of the control devices themselves as well as the associated monitoring or recording systems. Refer to the different Appendices for these specific details.

Operation, Maintenance and Monitoring

An OM&M Plan is required for each affected emissions unit that shows how you are meeting their respective emissions limits. The plan must be included with the Title V permit application and both the initial plan and any changes to the plan must be approved by the DNR. The plan must include the following:

- ✔ process and control device parameters and operating ranges or levels to be monitored;
- ✔ a monitoring schedule for each affected unit;
- ✔ procedures for proper operation and maintenance of each emissions unit and control device (calibration, certification of accuracy, CEM or COM quality control/quality assurance procedures);
- ✔ procedures to monitor emission unit and control device parameters (inspections, weight measurements, etc.);
- ✔ corrective actions for control device operation maintenance schedule for each emission unit and control device;
- ✔ documentation of work practice and pollution prevention measures for Group 1 furnaces without an add-on control device (including the scrap inspection plan).

While waiting to receive approval of the plan, the facility shall operate according to the provisions in the plan. The initial plan must be submitted on the compliance date of March 24, 2003. An approved plan must be included with the Notification of Compliance Status (see below) that is due 60 days later.

Start-up, Shut-down and Malfunction Plan

The owner/operator must also prepare a plan to describe the procedures for operating emissions units during start-up, shut-down, and malfunction (SSM) and a program of corrective action for malfunctions of either the emissions unit or control device equipment used to comply with the standard. For each event, the owner/operator should maintain records of whether actions taken during start-up, shut-down or malfunction were consistent with the written plan for such events. These records would include items like: the cause of a malfunction and when it began and ended; and corrective actions to be taken along with records on what actions were taken to correct a malfunction and minimize emissions.

Notification of Compliance Status Report

A notification of compliance status report is due 60 days after the compliance due date, or **May 23, 2003**. The report must include the following items:

❶ A complete report on the performance test for each affected unit.
❷ The approved site-specific test plan and test results for each continuous emissions monitoring system or continuous opacity monitor.
❸ The labeling required on specified units.
❹ Operating parameter ranges or values established over a specified time period for each affected emissions unit.
❺ Design information and documentation for capture/collection systems to demonstrate compliance.
❻ Supporting documentation demonstrating complinace for bag leak detection system.
❼ Manufacturer's specifications on residence time and temperature in afterburner for scrap dryer/delacquering kiln/decoating kiln or sweat furnace for alternate emissions limitations.
❽ Approved OM&M plan.
❾ Start-up, shut-down and malfunction plan, with revisions.

Excess Emissions/Summary Report

Within 60 days of the end of each 6 month reporting period, the owner/operator must submit a report summarizing events of excess emissions. If no deviations of the applicable requirements occur, the owner/operator must submit a report that no excess emissions occurred. The report must include:

✔ if any corrective action specified in OM&M for a control device or monitoring system was not initiated within 1-hour of an alarm;
✔ if there was an excursion of a compliant process or operating parameter value or range (e.g., total flux injection rate, afterburner operating specifications, etc.);
✔ any action taken during start-up, shut-down or malfunction was not consistent with the SSM plan;
✔ an affected source was not operated according to the requirements of the rule;
✔ a deviation from 3-day, 24-hour average emission limit for a SAPU;
✔ certification on thermal chip dryer, such as: "thermal chip dryer used only unpainted aluminum chips as feedstock during this reporting period";
✔ certification for sidewell Group 1 furnace with add-on control that "was operated such that metal remained above top of passage to hearth during fluxing or reactive flux added only to sidewell or to hearth also directed to control device";
✔ certification for Group 1 furnace without add-on control device and using pollution prevention measures that processes only clean charge that "each furnace without add-on control device and subject to work practice or pollution prevention, processed only clean charge"; AND
✔ results of any performance test conducted during the reporting period, including the approved test plan.

An annual compliance certification is also required to certify that during the year any excess emissions were properly reported and that all monitoring, recordkeeping and reporting requirements were met.

Records

All records must be maintained at least 5 years from the date of record, and at least the first two years they must remain on site. Records may be maintained on microfilm, computer disks, magnetic tape or microfiche. Reports may be submitted on paper as well as on a labeled computer disk using commonly available and EPA compatible software.
Follow the general provisions for the continuous monitoring systems requirements. See s. 63.10(c) of the Clean Air Act. Continuous monitoring systems would include equipment like the temperature monitoring devices installed on afterburners or continuous opacity monitors.

For each unit affected by an emission limit in lb/ton (kg/Mg) the owner/operator must record the amount of feed/charge during each appropriate time period. Charge materials for each ther-

mal chip dryer or Group 1 melting/holding furnace without add-on control devices must be recorded to show only clean charge was processed. Records are also required to document the monthly inspections for the unit labeling requirements and the annual inspections of capture/collection systems.

Any approved alternative monitoring or test procedure should have appropriate records.

AFTERBURNERS

Records are required for afterburners on each 15-minute average of operating temperature, for each 3-hour block where the average temperature fell below the compliant operating parameter value with an explanation of the excursion and related corrective actions, and for the annual inspection.

GROUP 1 FURNACES

For Group 1 furnaces with or without add-on control devices, records are required for each 15-minute average weight of gaseous or liquid reactive flux injection and calculations for each addition of flux as well as for any period where the rate exceeds the compliant operating parameter value and related corrective actions.
For Group 1 furnaces without add-on controls, records documenting conformance with an approved site-specific monitoring plan are required.

For Group 1 sidewell furnaces with add-on controls, records are required for the operating logs documenting conformance with standards for maintaining the level of molten metal above the passage to the hearth during fluxing, adding reactive flux only to the sidewell or controlling the hearth emissions as well.

SAPU

Each SAPU must have records of the total charge weight or the total production for each 24-hour period, and the calculations for each 3-day, 24-hour average emissions.

Permit Requirements

Areas sources affected by this rule must apply for a Title V permit. A Title V permit is the one usually required for major sources, but it also applies to area source categories when affected by a MACT standard. DNR will be incorporating this MACT standard into the Wisconsin Administrative Code rule process during 2003, at which time they will establish the due date for the area source permit applications. This date **only** applies if you are otherwise exempt from either the Title V or Minor Source Operation Permit requirements. Contact SBCAAP or your regional DNR contact for permit application information.

Additional Information

To obtain a copy of the full Secondary Aluminum MACT rule, contact the SBCAAP or go to EPA's web page specific to the rule at: ***www.epa.gov/ttn/atw/alum2nd/alum2pg.html***.

Contacts for More Information or Assistance.

The Small Business Clean Air Assistance Program helps smaller businesses understand and comply with the Clean Air Act regulations. Contact one of the program's Clean Air Specialists for more assistance: Renée Lesjak Bashel at 608/264-6153 or Tom Coogan at 608/267-9214.

in Wisconsin!

For further information on the Secondary Aluminum MACT contact your DNR Regional or Service Center office shown on the **DNR Contact Fact Sheet**.